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ABSTRACT

This publication contains six lessons for elementary, middle, and high school classrooms developed by writers from Belarus, Croatia, Hungary, Kyrgyzstan, Romania, Russia, and the United States. The authors of these lessons were participants in the Training of Writers program developed and conducted by the National Council on Economic Education, as part of the Cooperative Education Exchange Program. Since 1996 the program has helped teachers learn how to write instructional materials, through intensive writing exercises, expert guidance, feedback from peers, and follow-up by electronic mail. The publication consists of the following lessons: (1) "Old MacDonald Had a Farm" (Jadranka Bernik; Lessie Freeman; Stephenie Stevens; Jennifer Taunton); (2) "Goods and Services: Some Are Private, Some Are Not" (Aleksandr Balkunov; Agota Matyas; Lynne Stover; Cathy Trana); (3) "Scribe for Productivity" (Jeanine Kaczorowski Moore); (4) "Uncle Sam's Checkbook" (Vernon Dobis; Georgeta Georgescu; Martha Hopkins; Brenda Smith); (5) "Scarcity and Choice" (Liudmila Guinkel); and (6) "Public Goods and Services" (Svetlana Yurkovskaya). Each lesson provides a brief description; cites age level; addresses content standards and benchmarks; lists objectives; states time required and materials needed; suggests a step-by-step procedure for implementation; and discusses assessment and extension. Also offers visuals. (BT)

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Forward

It is a great pleasure to introduce Old MacDonald to Uncle Sam. This publication contains six lessons for elementary, middle, and high school classrooms developed by writers from Belarus, Croatia, Hungary, Kyrgyzstan, Romania, Russia, and the United States. The authors of these lessons were participants in the Training of Writers program developed and conducted by the National Council on Economic Education, as part of the Cooperative Education Exchange Program (formerly known as the International Education Exchange Program). Since 1996 the Writers program has helped teachers from both the U.S. and the emerging market democracies learn how to write instructional materials, through intensive writing exercises, expert guidance, feedback from peers, and follow-up work by e-mail.

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Old MacDonald Had a Farm

by Jadranka Bernik (Croatia), Lessie Freeman (USA), Stephenie Stevens (USA), Jennifer Taunton (USA)

LESSON DESCRIPTION

Students sing the familiar tune, "Old MacDonald Had a Farm." They identify goods on the farm and suggest services that Farmer MacDonald might have provided or wanted. Acting as farmers, they write two new verses for their farm. One verse identifies a good and the other identifies a service. They draw pictures of their goods and services and trade them for goods and services that other farmers in the class want to trade.

AGE LEVEL

6-8 years old

CONCEPTS

- Barter
- Goods
- Services

CONTENT STANDARDS

Productive resources are limited. Therefore, people cannot have all the goods and services they want: as a result, they must choose some things and give up others.

Voluntary exchange occurs only when all participating parties expect to gain. This is true for trade among individuals or organizations within a nation, and among individuals or organizations in different nations.

BENCHMARKS

Goods are objects that can satisfy people's wants.

Services are actions that can satisfy people's wants.

The oldest form of exchange is barter—the direct trading of goods and services between people.

OBJECTIVES

- Students will define goods, services and barter.
- Students will give examples of goods, services, and barter.

- Students will describe problems that occur in a barter system.
- Students will explain why people trade.

TIME REQUIRED

One to two class periods

MATERIALS

- Transparency of Visuals 1 and 2
- One copy of Visual 2 for each student
- Two sheets of paper for each student
- Bulletin board letters for "Old MacDonald Went to Trade" – prepare bulletin board prior to teaching the lesson
- Yarn
- One marker for each student
- Visual 1
- Visual 2

PROCEDURE

1. Seat students in a circle. Ask how many students know the song, "Old MacDonald Had a Farm." Most students will know many verses of the song. (To hear the tune, visit kididdles.com.) Tell students that today they will sing several verses of the song. Then each student will write two new verses.

2. Display Visual 1 and have the class sing the three verses of the song.

3. Explain that **goods** are objects that satisfy people's wants, such as hotdogs, blankets, jackets, and shoes.

4. Ask students for examples of goods they or their families have. *(Answers will vary but they might include games, skateboards, clothes, food, car, and house.)* If students answer with an example of a service, write the name of the service on the board. Point out that this is not a good, but they will use this example later.

5. Have students give examples of goods that they use in the classroom. *(Answers will vary but they might include desk, chair, books, playground equipment, and computer.)*

6. Ask for some examples of wants that are satisfied by goods that they mentioned. *(For example, food satisfies hunger; cars provide transportation; a house provides shelter; games and skateboards provide entertainment.)*

7. Tell students that some wants can be satisfied by a service. Explain that a **service** is an activity that satisfies people's wants. Services include such activities as

milking cows, shearing sheep, washing dishes, ironing clothes, and weeding a garden.

8. Ask for examples of services *(Answers will vary, but they might include taking out the trash, making the bed, cooking dinner, cleaning the house, washing the car, and teaching students.)*

9. Ask for some examples of wants that are satisfied by the services *(Possible answers include education from the teacher, neat and organized house from the cleaning, removal of trash, and a neat bed, and milk to drink from milking the cows.)*

10. Point out any services that might have been listed on the board in step 4. Ask students why these are considered services. *(They are activities, not objects, that satisfy a want.)*

11. Have students look at Visual 1 again and discuss.

    A. Does Farmer MacDonald produce goods or services on his farm? *(goods)*

    B. What goods does he produce? *(pigs, chickens, ducks)*

    C. Name some other goods Farmer MacDonald might produce. *(sheep, cows, goats)*

    D. Name some examples of goods that are not animals that he might produce. *(potatoes, wheat, corn, beans)*

    E. Name some services that Farmer MacDonald performs on his farm. *(planting seeds, milking the cow, collecting eggs, feeding the animals, picking potatoes, beans, and corn)*

    F. Explain that farmers also produce services for other farmers, such as harvesting wheat, baling hay, and shearing sheep. Ask for services other farmers might provide for Old MacDonald. *(shoeing horses, taking care of sick animals, hauling goods to market)*

12. Display Visual 2 and explain that students will write two new verses to the song. One verse should include a good that a farmer might produce. The other verse should include a service a farmer might provide.

13. Explain that each student will draw a picture of the good and the service included in his or her verses. Tell students to label each picture "good" or "service."

14. Write two new verses, using the examples of a cow and picking apples, to model the activity. Draw a picture of a cow on one sheet of paper. Label the picture

"good." Draw a picture of a farmer picking apples on the other sheet and label it "service."

15. Have the class sing the song with these new verses. Students will decide what noise or word to use for lines 3-6 of the song.

16. Give each student a copy of Visual 2, two sheets of paper and a marker. Tell them to write two new verses for the song, draw pictures of the goods and services, and label each picture "good" or "service."

17. Have students share their verses. Tell the class to identify the goods and the services in the verses.

18. Explain that the good and service identified in each student farmer's verses are the only goods and services that each student farmer has on his or her farm. Discuss the following.

    A. What other goods might you want on your farm? *(honey, wool, milk, tractor, wagon, barn)*

    B. What other services might you want? *(horses shod, hay cut, apples picked)*

    C. Which farmers in the room produced other goods and services you want? *(Students should name another student that has a good or service they want and identify the specific good or service.)*

19. Tell students that there are many ways to get the goods and services they want. One way is to barter. Explain that **barter** means trading goods and services for other goods and services without using money.

20. Ask for examples of when students have bartered. (traded baseball cards, traded food at lunch, traded toys or books) For each example, have students identify what the individual gave up and what he or she received.

21. Read the following aloud.

    Farmer Alice raised a pig. She wants some corn. Farmer Alan grew some corn and wants a pig. Farmer Alice trades her pig for Farmer Alan's corn.

22. Explain that students will have an opportunity to barter using the pictures of the goods and services that they drew. They may exchange the good they produce or service they provide on their farm for something they want that another farmer produces or provides.

23. Model an exchange using the pictures of the cow and the farmer picking apples. Begin a trading period.

24. After most students have had time to trade, stop the trading period and discuss the following.

    A. What trades did you make? *(Answers will vary.)*

    B. Did you trade goods or services or both? Which was a good and which was a service? *(Answers will vary.)*

    C. Did anyone have problems making a trade? Explain. *(No one wanted what I had to trade. My cow was worth more than the goods other students had to trade with me.)*

    D. Did anyone trade more than once? Explain. *(I changed my mind. I traded for something I didn't want and then traded that for something I did want.)*

25. Explain that for trade to occur each student must want what the other student has to trade. Finding someone who has something for which you are willing to trade and needing to make multiple trades to get what you want are problems that might occur with barter.

26. Put student pictures on the "Old MacDonald Went to Trade" bulletin board. Review which goods students produced and which services they provided. Have them identify the trades they made. Connect the trades with yarn.

27. Draw students' attention to all the trades that were made. Have them explain how the trades benefited the farmers. *(They were able to get many goods and services they didn't have.)* Point out that the farmers were better off by trading.

Closure

Review the main points of the lesson with the following.

1. What are goods? *(Goods are objects that satisfy people's wants.)* Give some examples of goods. *(Answers will vary.)*

2. What are services? *(activities that satisfy people's wants) Give some examples of services. (Answers will vary.)*

3. What is barter? *(the direct exchange of goods and services; trade without money)*

4. Why might people barter? *(to get goods and services they want)*

5. What are some problems with bartering? *(finding someone who wants what you have to trade and who has what you want; sometimes multiple trades must be made to get what you want)*

6. Give an example of bartering. *(trading a yo-yo for a book; shearing sheep for eggs, cleaning your room for a month for a new game)*

7. How does trading benefit the individuals who are bartering? *(Each is better off.)*

Assesment

1. Tell students to draw a picture of a bartering situation. Ask them to write at least a three sentence paragraph that includes the following.

    - An explanation of what was traded
    - Identification of what was traded as a good or service
    - Explanation of why each individual was willing to trade

2. Have students write a short paragraph about how they might barter for goods and services during a school day.

Extension

1. Schedule a "Barter Day." Have students bring a small, inexpensive item from home to trade. Be sure to notify parents and students that any item traded will not be returned. Conduct a bartering session where students can trade their items. After the bartering session, have students write a journal entry explaining what they traded for and why and identifying any problems they had.

2. Have students create a book that follows the bartering adventure of a second grade student through town. A sample entry might be that John had a video game. John traded his video game to Bob for Bob's soccer ball. Have students illustrate the book and share it with a kindergarten class.

Visual 1

Old MacDonald Had a Farm

Old MacDonald had a farm. E I E I O
And on this farm he had some pigs. E I E I O
With an oink, oink here,
And an oink, oink there,
Here an oink, there an oink,
Everywhere an oink oink,
Old MacDonald had a farm. E I E I O
Old MacDonald had a farm. E I E I O
And on this farm he had some chickens. E I E I O
With a cluck, cluck here,
And a cluck, cluck there,
Here a cluck, there a cluck,
Everywhere a cluck, cluck,
Old MacDonald had a farm. E I E I O
Old MacDonald had a farm. E I E I O
And on this farm he had some ducks. E I E I O
With a quack, quack here,
And a quack, quack there,
Here a quack, there a quack,
Everywhere a quack, quack,
Old MacDonald had a farm. E I E I O

Visual 2

Old MacDonald – New Verses

Verse 1

Old Mac_____ had a farm.
(Write your last name.)
E I E I O
And on this farm he had a _____
(Name a good.)
E I E I O

Verse 2

Old Mac_____ had a farm.
(Write your last name.)
E I E I O
And on this farm he had a_____
(Name a service.)
E I E I O

Goods and Services: Some are Private, Some are Not

by Aleksandr Balkunov (Kyrgyzstan), Agota Matyas (Hungary), Lynne Stover (USA), Cathy Trana (USA)

LESSON DESCRIPTION

Students make construction paper cutouts of businesses and structures and create a community map bulletin board. Students analyze the goods and services available in their community to determine that some are privately produced and governments provide others. Students learn that taxes, fees, and loans pay for government goods and services.

AGE LEVEL

9-11 years old

CONCEPTS

- Government goods and services
- Private goods and services
- Taxes

CONTENT STANDARDS

There is an economic role for government to play in a market economy whenever the benefits of a government policy outweigh its costs. Governments often provide for national defense, address environmental concerns, define and protect property rights, and attempt to make markets more competitive. Most government policies also redistribute income.

BENCHMARKS

Governments provide certain kinds of goods and services in a market economy.

Governments pay for the goods and services they use or provide by taxing or borrowing from people.

OBJECTIVES

- Students will distinguish between goods and services provided by private businesses and those provided by government.

- Students will explain why governments provide certain goods and services.
- Students will explain that taxes collected by governments are used to pay for goods and services provided by governments.

TIME REQUIRED

One to two class periods

MATERIALS

- Large sheet of paper to cover a bulletin board
- Assorted colors of construction paper, ½ sheet per student
- Crayons and tape
- Scissors, 1 pair per student
- One copy of Activities 1 and 2, each printed on a different color paper and cut apart
- Copies of Activity 3, one per student
- Transparencies of Visuals 1 and 2
- Construction-paper cutout of a parks department building
- Activity 1
- Activity 2
- Activity 3
- Visual 1
- Visual 2

PROCEDURE

1. Display Visual 1 and ask students where they would call to report a broken swing set in the park. *(Parks Department)* Write the answer on the bottom of Visual 1.

2. Randomly distribute one card from either Activity 1 or 2 to each child. Keep the card that identifies the parks department for use in step 12.

3. Tell students to read the cards and write the answer to the question on the back of their cards.

4. Direct students' attention to the blank bulletin board. Tell them that the bulletin board is a picture of their community. Ask what is missing. *(Possible answers might include houses, buildings, stores, and businesses.)*

5. Tell students to look at the answers they wrote on the back of their cards. Have them share their answers. *(movie theater, video store, sporting goods store, hair salon, restaurant, dry cleaner, car dealership, pet store, rental office, bank, bowling alley, dentist, clothing store, grocery store, stationery store, gas station, news stand, post office, highway department, library, school, sanitation*

department, zoo, recycling center, police station, parks department, bridge, traffic light, street signs)

6. Tell students that all their answers are examples of buildings and structures that are missing from their community. Explain that they will make construction-paper cutouts of structures that they have written on the back of their cards.

7. Display Visual 1 with the answer, "parks department," written on it. Show students the construction paper parks department as a model.

8. Give a piece of construction paper, scissors, and crayons to each student. Tell them to make their construction-paper structures. When they are finished, have them share their structures.

9. Explain that some buildings and structures represent businesses. Businesses produce and sell goods and services to people. Some buildings and structures represent goods and services provided by governments to their citizens.

10. Display the parks department cutout. Tape the appropriate card from Activity 2 on the construction paper cutout.

11. Distribute tape. Have students tape the cards from Activity 1 or 2 on their construction paper structures so that the name of each structure is visible.

12. Attach each structure to the bulletin board and label it "Our Community." Draw roads and a river on the bulletin board. Discuss the following.

    A. What do the two different color labels on the buildings and structures in our community have in common? *(One color represents privately owned businesses and one color represents things provided by the government.)*

    B. Who provides our community with the greater number of goods and services we want? *(private businesses)*

    C. What goods and services are provided by the privately owned businesses? *(movies, videos, sporting equipment, haircuts, food, clean clothes, cars, pets, apartments, banking services, entertainment, dental care, coats, groceries, school supplies, gasoline, newspaper)* Point out that businesses sell these goods and services to their customers.

    D. What goods and services does government provide? *(mail, postage stamps, road repairs, books, trash pickup, zoo, recycling collection, police protection, recreation, bridge, traffic light, street signs)* Point out that the government collects taxes from people and businesses in the community to be able to pay for these goods and services.

13. Reinforce the concept of government goods and services using the example of cleaning the classroom. Point out the mess in the classroom from the activity. Discuss the following.

    A. Is it fair for one person to clean up the room while the rest of us go out to play? *(No.)* Why not? *(The mess was made by many students.)*

    B. Who should clean up the mess? *(Students might suggest those who made the mess or taking turns.)*

    C. What might happen if we ask everyone to clean up the room voluntarily? *(Some would and some wouldn't. Those who don't volunteer would benefit because other students would clean the room.)* Is this fair? *(No, some students benefit and don't do any work.)*

    D. What happens when people make a mess in our parks? *(City workers clean it up.)*

    E. Who pays for the goods and services bought from private businesses such as a fast food restaurant, movie theater, or grocery store? *(consumers, such as the students and their parents)*

    F. Who pays for the goods and services provided by the government? *(If students don't know, tell them that people and businesses pay taxes that are used to provide these services.)*

14. Explain that **taxes** are monies paid by people to the government. Government uses these monies to pay for goods and services it provides.

15. Tell students that sometimes these goods and services are also paid for with fees such as bridge and highway tolls and entrance fees to public parks.

16. Explain that governments can borrow money to pay for some goods and services that require a great deal of money to produce, such as national defense, health insurance for the elderly, and education, if they don't collect enough taxes. When the government borrows money, it must pay it back with interest

17. Discuss the following.

    A. What are some types of taxes? *(sales, property, income)*

    B. Why does government provide certain goods and services? *(Consumers want these goods and services and feel they are so important they should be made available to everyone. These include such things as national defense, education, and highways.)*

C. If consumers want these goods and services, why won't private businesses provide them? *(Private businesses won't offer these goods and services because once they are produced, some people will benefit even if they didn't pay for the good or service.)* Refer back to the example of cleaning up the classroom, pointing out that everyone benefits even if only a few voluntarily clean up the mess. Ask students for examples from their community. *(street lights, traffic lights, police protection)*

18. Display Visual 2. Have students sing, "Some Are Private; Some Are Not. "

Closure

Review the main points of the lesson with the following.

1. What are private goods and services? *(Goods and services produced privately and sold to consumers.)*

2. What are some examples of private goods and services? *(restaurant meals, books, cars, clothes, televisions, games)*

3. What are some examples of goods and services provided by government? *(national defense, bridges, police protection, highways)*

4. How does government pay for these goods and services? *(taxes, fees, and borrowing)*

5. What are taxes? *(Money collected by government to pay for goods and services it provides.)*

6. Why do private businesses not provide the kinds of goods and services that governments provide? *(Businesses will have difficulty selling them. Once the good or service is provided, some consumers will be able to use it without paying.)*

7. Why do citizens think that government should provide certain goods and services? *(Citizens think these goods and services are important for every one to have or use.)*

Assesment

Distribute a copy of Activity 3 to each student. Tell them they will be detectives looking for goods and services provided by government and private businesses. Ask students to read newspapers, listen to television and radio news stories, and walk through their neighborhoods and towns to look for examples. Instruct students to list five examples of private goods and services and five examples of goods and services provided by government. For each good or service listed, they should write where they obtained the information.

Extension

1. Tell students that a fable is a short tale in which animals talk and a lesson is learned. Ask students to write a fable that teaches how goods and services provided by government benefit a community.

2. Write new verses for the song, "Some Are Private; Some Are Not."

Activity 1

Private Goods and Services

Where would you go to see the most current movie?	Where would you go to deposit a paycheck?
Where would you go to rent your favorite video?	Where would you go to join a friend for a game of bowling?
Where would you go to buy a new baseball and glove?	Where would you go to get your shoes repaired?
Where would you go to get your hair cut?	Where would you go to get your teeth cleaned?
Where would you go to eat your favorite fast food?	Where would you go to buy a winter coat?
Where would you go to get your clothes cleaned?	Where would you go to buy groceries?
Where would you go to buy a new car?	Where would you go to buy school supplies?
Where would you go to buy a new puppy?	Where would you go to fill your car up with gas?
Where would you go to rent a place to live?	Where would you go to buy a newspaper?

Activity 2

Public Goods and Services

Where would you go to mail a letter?	Where would you go to drop off items for recycling?
Where would you go to complain about road conditions?	Where would you go to report a crime?
Where would you go to borrow a book?	Where would you call to report a broken swing set in the park?
Where would you go to learn to read?	What is needed so cars can drive across a river?
What is needed to mail a letter?	What is used to help walkers cross the street at busy intersections?
Where would you go to see wild animals?	What is needed to see street signs at night?

Activity 3
Detectives for Goods and Services

You are detectives looking for goods and services. Search your neighborhood, read newspapers, and listen to television and radio news reports. Record five goods or services provided by private businesses and five goods and services provided by government. For each good or service write where you found it.

Goods and Services Sold by Private Businesses	Goods and Services Provided by Government

Visual 1

Government Goods and Services

Where would you call to report a broken swing set in the park?

Visual 2
Some Are Private, Some Are Not

Businesses sell private goods
Cars and books and games.
Doctors, bankers, plumbers, too
Services provide.
With a shot, shot here
And a check, check there
Here a doc, there a bank
All consumers thank, thank
Businesses for things they sell
Things to you and me.
Governments provide things, too.
Bridges, roads, and parks,
Traffic lights, street signs, and mail.
Libraries and schools.
With a stamp, stamp here
And a book, book there
Here a zoo, there a tank
All citizens thank, thank
Governments for things they do
Things for you and me.
(Sung to the tune of Old MacDonald Had a Farm.)

Scribe for Productivity

by Jeanine Kaczorowski Moore (USA)

LESSON DESCRIPTION

In this lesson, students participate in three rounds of a simulation in which they are merchants who must keep written records on their trades. In Round 1 they do not have some required skills or knowledge and are unable to produce written records. They must rely on scribes. In Round 2 the merchants use new information about Babylonian numerals and the Phoenician alphabet and receive training in using these. New technology is introduced in Round 3. After each round, students explain the effect of new information and technology on the productivity of workers.

AGE LEVEL

11- 13 years old

CONCEPTS

- Labor productivity
- Human capital
- Technological change
- Capital goods

CONTENT STANDARDS

Investment in factories, machinery, new technology, and the health, education, and training of people can raise future standards of living.

BENCHMARKS

Productivity is measured by dividing output (goods and services) by the number of inputs used to produce the output. A change in productivity is a change in output relative to input.

Technological change is an advance in knowledge leading to new and improved goods and services and better ways of producing them.

Increases in productivity result from advances in technology and other sources.

OBJECTIVES

- Students will define labor productivity, human capital, technological change, and capital goods.

- Students will calculate labor productivity.
- Students will explain the effects of improving human capital and advances in technology on labor productivity

TIME REQUIRED

Two class periods

MATERIALS

- Chart paper and marker
- Modeling clay (enough for each student to make one tablet)
- Toothpicks, at least one for each student
- Transparencies of Visuals 1 and 2
- One copy of Visual 1 for each student
- Paper lunch bags, two per student
- Black paint, one dish for each group
- One paint brush for each pair of students
- One water dish for each pair of students
- One wooden dowel for each pair of students
- Visual 1
- Visual 2

PROCEDURE

Day 1

1. Ask for examples of things students do during the course of the day that require writing. Record their responses on the board. Discuss the following.

    A. What would your life be like if there were no form of writing? *(Answers will vary.)*

    B. How would we communicate, keep records, or understand the laws of our country without writing? *(Answers will vary.)*

    C. Why is it important to have written as well as oral communications? *(Answers will vary but should include reference to the importance of recording information and data.)*

2. Point out that it would be difficult to carry out the activities of daily life if no one knew how to read and write. Explain that writing was important to the Sumerians because they needed to keep accurate records that included information on sales, trades, and tax payments. They also had to write to determine the amount of food and supplies needed by the military and calculate the number of workers needed for various projects.

3. Tell students that they will participate in a simulation in which they are merchants who need to record information about a transaction they have made on a clay tablet.

4. Distribute a small ball of clay and a toothpick to each student. Give each pair of students a wooden dowel.

5. Demonstrate how to use the dowel to roll out the clay into a square tablet about ¼" thick. Allow time for students to make their tablets. On the board, write the following.

TRADE

2 BAGS OF RICE
1 BUSHEL OF DATES

IN EXCHANGE FOR

1 BRONZE BRACELET
4 POTTERY BOWLS

6. Tell students they have three minutes to use the toothpick to record the information in Visual 1 on their tablets using cuneiform. Explain that the cuneiform system of writing began with pictograms and consisted of hundreds of wedge-shaped markings made by pressing the end of a sharp reed on wet clay tablets.

   Note to teacher: Students are likely to point out that they don't have this information. Explain that Babylonian numerals aren't the Arabic numerals we use today, and Phoenician letters are not the Roman letters that we use today, although there are some similarities. Tell them that the Babylonians used wedge-shaped figures and the Phoenicians used a combination of straight lines and squiggles. Tell them to do their best to complete the assignment.

7. Observe students working. When they become frustrated, which will occur quickly, stop the simulation. Ask why they aren't producing any completed tablets. *(don 't know cuneiform, don 't know how)*

8. Explain that cuneiform was used in ancient Sumer. It was complicated and difficult to learn. As a result, most citizens of Sumer, including merchants, did not know how to write. Only a few people could write and they were known as scribes. Writing was one of the most valuable skills in the ancient world, and scribes held positions of great respect in Mesopotamia. Ask what might be a problem using scribes to record your information. *(won 't know if the scribes are recording the correct information, would be dependent on scribes for business)*

9. Display Visual 1 and give a copy to each student. Demonstrate how to complete the table, using the following questions.

   A. What was the output of the workers? *(a completed tablet)*

   B. How many completed tablets did the workers complete in this round? The total number of completed tablets is the total output. *(In this round the output is zero because students don't know cuneiform.)* Record "0" in Column 2 for Round 1.

   C. How many workers were there? *(This is the number of students participating in the simulation.)* Record this in Column 3 for Round 1.

   D. Tell students that Column 4 indicates labor productivity. **Labor productivity** is the amount of output (goods and services) produced per unit of input (labor) or output divided by inputs. Write this definition on the chart paper. Display the paper and add definitions as the simulation continues.

   E. Demonstrate that productivity (total number of tablets divided by total number of workers) is zero because no accurate tablets were produced. Record a "0" in Column 4 for Round 1.

   F. How did you feel when you weren't able to produce any tablets? *(frustrated, upset, angry)*

   G. Why weren't you able to produce any completed tablets? *(They didn't know cuneiform writing and, therefore, couldn't record the transactions.)*

   H. What could help you produce completed tablets in the future? *(knowledge about cuneiform writing, training)*

10. Tell students that they will continue as merchants in Rounds 2 and 3 of the simulation. IN each round, they will measure their labor productivity as demonstrated in Round 1.

11. Explain that before Round 2, students must receive training to improve their human capital and have an opportunity to practice. Explain that human capital is the quality of labor resources that can be improved through investments in the health, education, and training of workers. Record the definition on the chart paper.

12. Explain that knowledge and skills that the students bring to school everyday is their human capital. Ask how school helps them improve their human capital. *(They learn new information and skills.)*

13. Have students predict what will happen to productivity in Round 2 with the improvement in their human capital. Tell students to record their predictions on Visual 1.

14. Inform students that in Rounds 2 and 3, they no longer live in ancient Sumer and will not have to rely on scribes.

15. Explain that over time civilizations invented new ways of recording information that was easier to learn. In Rounds 2 and 3, they will use inventions from two different time periods – Babylonian numerals from the Babylonian empire (1800 B.C. to 1600 B.C.) and Phoenician letters developed about 1000 B.C. Explain that Babylonian numerals aren't the same as the Arabic numerals we use today, and Phoenician letters are not the Roman letters that we use today, although there are some similarities. The Phoenician alphabet was a set of 22 symbols that represented the sounds of the language. It forms the basis of the alphabet that people in many countries use today

16. Display Visual 2 and distribute a copy to each student. Explain that a vertical wedge represents numeral "1" and a horizontal wedge represents numeral "10". Two horizontal wedges would be numeral "20" and one horizontal wedge and five vertical wedges would be the numeral "15."

17. Have students practice with numeral 37 *(three horizontal wedges and seven vertical wedges)* and numeral 54 *(five horizontal wedges and four vertical wedges)*.

18. Tell students to reshape their clay tablets during the allotted production time (three minutes). Display Visual 1, reminding students that they have three minutes to record the transaction on their tablets. When students complete a tablet, they may obtain additional clay to make another tablet.

19. After three minutes, stop the writing and display Visual 1. Tell students to complete Round 2 on their copy of Visual 1. Discuss the following.

    A. What was the total output of each worker? *(number of completed clay tablets)*

    B. What was the total output of all workers? *(number of tablets completed by the class)* Record this in Column 2 for Round 2.

    C. How many workers were there? *(This is the number of students participating in the simulation.)* Record this in Column 3 for Round 2.

    D. Remind students that labor productivity is the amount of output produced per worker. What was the labor productivity in Round 2? *(total output*

divided by the number of workers) Record this answer in Column 4 for Round 2.

E. Why was there an increase in output and labor productivity between Round 1 and Round 2? *(Scribes had new information about the Babylonian numerals and the Phoenician letters, and they had training and time to practice.)*

F. Refer to your prediction for Round 2. Was your prediction correct? If so, what made you predict this increase? *(They probably thought that knowledge of numerals and letters would make recording the transactions quicker and easier.)*

G. What technological advances could make labor productivity even greater? *(paper and pencil, a computer)*

Day Two

1. Explain that in Round 3 a **technological change** will be introduced. Define technological change as the incorporation into production of new knowledge and processes that result in (1) a different organization of the production process, (2) improvements or the introduction of innovative capital goods, or (3) modifications of the goods and services currently being produced or the invention and introduction of new goods and services. Record this definition on the chart paper.

2. Define **capital goods** as goods produced and used over and over to make other goods and services. Record this definition on the chart paper. Give examples such as new factories, machines, or means of communication. Ask for examples of capital goods students use at school. *(books, calculators, desks)* Ask what capital goods were used in Round 2. *(toothpicks, wooden dowels)*

3. Explain that as the need developed for more convenient writing surfaces, paper was made from a reed-like plant called papyrus. To write on papyrus, scribes used long, thin, reed brushes. Their ink was a mixture of water and soot, black powder left from burned wood.

4. Tell students that papyrus will be a paper bag, a reed brush will be a paintbrush, and ink will be black paint in their next round of production.

5. Have students group into their previous pairs. Distribute two paper bags and one paintbrush to each student and a dish of water to each pair.

6. Have students predict what will happen to their productivity in Round 3 and record their prediction on Visual 1.

7. Display Visual 1. Tell students in Round 3, they will have three minutes to combine both knowledge and technology to record the transactions from Visual 1. Announce that students may produce more than one papyrus scroll.

8. At the end of three minutes, tell students to stop working. Determine the total output and instruct students to complete Visual 1, Round 3, independently.

9. Display Visual 1. Review student answers using the following questions.

   A. What was the output of the workers? *(completed recordings of the transactions)*

   B. What was the total output of all the workers? *(total number of completed scrolls)* Record this in Column 2 for Round 3.

   C. What was the total number of workers? *(This is the number of students participating in the activity.)* Record this in Column 3 for Round 3.

   D. What was the labor productivity in Round 3? *(The number of scrolls produced divided by the number of workers.)* Record this answer in Column 4 for Round 3.

   E. What was the change in labor productivity between Rounds 2 and 3? *(Answers will vary but should show an increase.)*

   F. Explain that an increase in productivity means producing more goods and services with the same amount of resources or producing the same amount of outputs with fewer inputs. Record this information on the chart paper.

   G. Why was there an increase in productivity? *(New technology helped the scribes complete the transactions faster and easier. They could complete the transactions in less time.)*

   H. How did the introduction of new technology improve productivity? *(Scribes didn't have to form the clay tablets, which took time; and writing the information was easier with the paint and brushes.)*

   I. How have these advances, knowledge and technology, improved your human capital? *(Workers had more skills and knowledge. As a result, they produced more accurate scrolls in the same amount of time. Using paper was easier than using clay.)*

   J. How did the new technology and information affect the quality of the final product? *(Scrolls were easier to read than the clay tablets.)*

   K. Was your prediction for Round 3 correct? Explain. *(Answers will vary.)*

10. Have students identify technological changes that have occurred to improve recording transactions. *(better paper and writing instruments, use of money, typewriters, computers, optical scanning devices, and so on)*

Closure

Review the main points of the lesson with the following.

1. What is labor productivity? *(the amount of output produced per worker)*

2. How is labor productivity measured? *[by dividing output (number of goods produced) by input (number of workers)]*

3. How can productivity be increased? *(through improvements in human capital with training and education and with the use of technology)*

4. What is human capital? *(the quality of labor resources; the skills and knowledge that labor resources possess)*

5. How can human capital be improved? *(through training and new knowledge)*

6. What is technological change? *(the incorporation into production of new knowledge and processes that result in (1) a different organization of the production process such as an assembly line, (2) improvements or the introduction of innovative capital goods, or (3) modifications of the goods and services currently being produced or the invention and introduction of new goods and services)*

7. Give examples of improvement in technology from the simulation *(papyrus, ink)*

8. What are capital goods? *(Capital goods are things produced and used to make other goods and services. Capital goods are not used up in the production process.)* Give some examples of capital goods. *(factories, machines, means of communication, tools)*

9. Give examples of capital goods from the simulation. *(brushes, toothpicks, wooden dowels)*

10. How does the use of technology and the training and education of workers affect the final product? *(The quality may improve, and more can be produced.)*

Assesment

Write the following on the board for students to answer.

Like the Sumerians, the ancient Egyptians used picture-like symbols called hieroglyphics to record their ideas. How might the introduction of hieroglyphics affect productivity in ancient Egypt? Explain your answer. Why might this advancement have been important to the Egyptians?

Extension

Sumer had many types of scribes. There were those who worked for the merchants as well as government and military scribes. Write about the day in the life of one of these scribes and explain how it would have changed if the citizens of Sumer had been able to take advantage of the later advancements in technology such as Babylonian numerals and Phoenician letters.

Visual 1

Comparing Productivity

1 ROUND	2 OUTPUT (3 MIN.)	3 INPUT	4 LABOR PRODUCTIVITY (3 MIN.)
1			
2			
3			

Prediction: What will happen to the productivity of workers in Round 2 with the improvement in human capital?

_____

_____

Prediction: What will happen to the productivity of workers in Round 3 with the addition of new technology?

_____

_____

Visual 2

Babylonian Numbers/Phoenician Letters

1 =	A	N
	B	O
	C	P
10 =	D	Q
	E	R
	F	S
20 =	G	T
	H	U
	I	V
15 =	J	W
	K	X
	L	Y
	M	Z

Uncle Sam's Checkbook

by Vernon Dobis (USA), Georgeta Georgescu (Romania),
Martha Hopkins (USA), Brenda Smith (USA)

LESSON DESCRIPTION

Students learn about the components of federal income taxes and expenditures. They also create and analyze political cartoons relevant to federal taxes and expenditures.

AGE LEVEL

11- 13 years old

CONCEPTS

- Income
- tax
- federal tax revenue
- payroll tax
- federal expenditures
- personal income tax

CONTENT STANDARDS

There is an economic role for government to play in a market economy whenever the benefits of a government policy outweigh its costs. Governments often provide for national defense, address environmental concerns, define and protect property rights, and attempt to make markets more competitive. Most government policies also redistribute income

BENCHMARKS

Most federal tax revenue comes from personal income and payroll taxes. Payments to social security recipients, the costs of national defense, medical expenditures, and interest payments on the national debt constitute the bulk of federal government spending.

OBJECTIVES

- Students will define income, tax, personal income tax, and payroll tax.
- Students will identify taxation as a source of federal revenue.
- Students will identify four major areas of federal government spending.

TIME REQUIRED

Two class periods

MATERIALS

- One copy of Activity 1 for each student, cut apart
- One copy of Activity 2 for each pair of students
- Scissors for each student (optional)
- Transparency of Visual 1
- "Uncle Sam's" hat (Make a hat for a student to play Uncle Sam and collect taxes in the hat.)
- Five stand-up signs: National Defense, Social Security, Medical Care, Interest on the National Debt, and Other Services
- Transparency of a political cartoon from a local newspaper or a news magazine
- Blank transparency and transparency pen for each pair of students
- Activity 1
- Activity 2

PROCEDURE

Day 1

1. Congratulate students, telling them that they've just landed a job at Vern's Big Burger Barn, a local fast-food restaurant. Give ten dollars from Activity 1 to each student or give a copy of Activity 1 and scissors to each student and have students cut the money apart, explaining that the ten dollars represents the income earned for their first day of work.

2. Define **income** as the payment people receive for providing resources in the marketplace. When people work, they earn a wage or salary. Each student's wage for working at Burger Barn is $5 per hour. Because each student worked two hours, his or her pay is ten dollars. Discuss the following.

    A. How much income do you have to spend? *(ten dollars)*

    B. How do you want to use your income? *(buy CD, go to a movie, save it)*

    C. Have you ever heard anyone mention "Uncle Sam?" If so, do you know who "Uncle Sam" is? *(Uncle Sam refers to the United States government.)*

3. Explain that one student in the class will act as Uncle Sam. Select a student and give the student the Uncle Sam hat.

4. Explain that each student must pay three dollars to the federal government, Uncle Sam, as taxes. **Taxes** are required payments to government. Have Uncle Sam collect the taxes. Discuss the following.

    A. After paying taxes, how much income do you have? *(seven dollars)*

    B. Will you be able to buy more or fewer goods and services after paying taxes? *(fewer)*

5. Explain that the taxes the federal government collects are referred to as tax revenue. Most of the federal government's tax revenue comes from personal income and payroll taxes.

6. Define **personal income tax** as taxes on all personal income – the income people earn as individuals for providing resources in the marketplace. Personal income includes wages, salaries, rent, interest, and dividends.

7. Define **payroll taxes** as taxes on wages and salaries only. Social Security and Medicare payroll deductions are examples of payroll taxes.

8. Display Visual 1 and explain that the tax revenue Uncle Sam collects is deposited in "Uncle Sam's" checking account. Point out that the visual shows a check register for Uncle Sam's account. In a check register, people record money coming into their account and money going out of their account.

9. Explain that the amount of tax revenue collected is deposited in Uncle Sam's account (recorded as a credit). Ask the students how much tax revenue was collected in the class ($3 times the number of students in the class). Enter this amount on the register as a credit (deposit) labeled "Tax Revenue."

10. Explain that the federal government uses its tax revenue to run the government and to provide various goods and services to people.

11. Tell students that the federal government spends approximately 16% of its tax revenue on national defense. National defense expenditures are for military forces, equipment, and other things related to the defense of the country. Have students calculate 16% of the tax revenue collected in the class. Round to the nearest dollar and count that amount into a pile. Place the appropriate sign next to this pile of tax revenue.

12. Remind students that people record money spent (going out of their account) in their check registers. Enter "National Defense" as a payment or debit on the register. Enter the amount and subtract the amount from the previous balance.

13. Explain that the federal government spends approximately 23% of its tax revenue on Social Security – a program that provides retirement, disability, family, and

survivors' funds for some people. Have students calculate 23% of the tax revenue collected in the class. Round to the nearest dollar and count that amount into a pile. Place the appropriate sign next to this pile.

14. Tell students that this is another payment or debit in Uncle Sam's checking account. Enter "Social Security" in the register. Enter the payment amount and subtract from the previous balance.

15. Explain that the federal government spends approximately 21% of its tax revenue on medical care for the poor, disabled, and elderly. Have students calculate 21% of the total revenue collected in class. Round to the nearest dollar and count that amount into a pile. Place the appropriate sign next to this pile.

16. Enter "Medical Care" in the check register. Enter the payment amount and subtract from the previous balance.

17. Explain that the federal government spends approximately 15% of its tax revenue on interest on the national debt. When the federal government borrows money, it must pay interest. Have students calculate 15% of the total revenue the class collected. Round to the nearest dollar and count that amount into a pile. Place the appropriate sign next to this pile.

18. Enter "Interest on the National Debt" in the register. Enter the payment amount and subtract from the previous balance.

19. Count the remaining amount and place the remaining amount of tax revenue in a fifth pile. Place the "Other" sign next to the pile. Explain that the government spends the remainder of its revenue on other government services. This includes operating the government, transportation, housing, education and so on.

20. Enter "Other Services" in the register. Enter the payment amount and subtract from the previous balance.

21. Ask the students what percent of its tax revenue the government spends on national defense, Social Security, medical care, and interest on the national debt combined. *(15% + 21% + 16% + 23% = 75%)* Point out that the remaining 25% of the tax revenue is spent on other services.

Day Two

1. Ask students if they ever read cartoons or comics in the newspaper. *(Answers will vary.)*

2. Explain that often there are cartoons in another section of the paper. These are political cartoons that are found in the editorial section of the newspaper. A

political cartoon is a satirical drawing or caricature pertaining to government or politics.

3. Explain that most political cartoons have three components.

    - **Nametags and/or titles:** Most cartoons contain titles; some contain nametags. These help the readers focus on the topic to which the artist is referring. In addition, any written information found in the cartoon is included in this component.
    - **Symbols:** Symbols are ideas represented in another form. For example, an eagle or Uncle Sam might be used to represent the United States. A donkey might represent the Democratic Party. An elephant might represent the Republican Party. A dove might represent peace.
    - **Exaggeration:** Usually the artist exaggerates or emphasizes some component of an object or a person in the drawing. For example, the artist might draw a caricature of a person showing the person with big ears, teeth, or nose.

4. Display a transparency of a political cartoon. Discuss the following.

    A. What written text, name tags, or titles are found in this cartoon?

    B. What symbols are found in the cartoon?

    C. What exaggeration is found in the cartoon?

    D. What statement is the cartoonist trying to make?

    E. Why do you agree or disagree with the artist 's statement?

5. Tell students that they will demonstrate what they have learned about federal taxes and expenditures through political cartoons. To review what they have learned the previous class, discuss the following.

    A. What are taxes? *(required payments to government)*

    B. What are two sources of federal tax revenue? *(Personal income tax and payroll taxes)*

    C. For what does the federal government use tax revenue? *(to operate the government and to provide goods and services for people)*

    D. What are four major areas on which the U.S. federal government spends tax revenue? *(national defense, interest payment on the national debt, medical care, Social Security)*

E. How does the federal government spend tax revenue for national defense? *(wages for soldiers, weapons, military equipment)*

F. How does the federal government spend tax revenue for Social Security? *(retirement pensions for some elderly citizens, payments to some disabled people, payments to some families and survivors)*

G. How does the federal government spend tax revenue for medical care? *(medical care for elderly, poor, and disabled)*

H. What is the interest payment on the national debt? *(National debt is the sum of the amounts the federal government has borrowed over years. The government must pay interest on this debt each year.)*

I. What are other services on which the government spends revenue? *(operating the government—salaries to employees, equipment, buildings and so on; housing, transportation, education, and so on)*

6. Divide the students into pairs. Explain that each pair will create a political cartoon. Each cartoon must make a statement about sources of federal government tax revenue and/or federal government expenditures.

7. Point out that artistic ability/quality is not as important as the message the cartoon conveys about the economics the students have learned.

8. Give a copy of Activity 2, a blank transparency, and an overhead pen to each pair of students.

9. Tell students to produce a rough draft of their cartoon. When they are satisfied with the drawing, they should list the three elements of their drawing on Activity 2 and indicate the message that they are trying to convey. Then they may transfer the drawing to the transparency.

10. When students have completed their drawings, have each pair display its cartoon. Other students should try to interpret the meaning of the cartoon. Then allow the pair, using Activity 2, to clarify the meaning of its cartoon.

Closure

Review the main points of the lesson with the following.

1. What is income? *(payments people receive for providing resources in the marketplace)*

2. What type of income did you earn for working at Vern's Big Burger Barn? *(wages)*

3. Why weren't you able to keep all the income you earned from your job at Vern 's Big Burger Barn? *(had to pay taxes)*

4. What are taxes? *(required payments to government)*

5. For what does the federal government use tax revenue it collects? *(to operate the government and to provide services for people)*

6. What are the two main sources of federal tax revenue? *(personal income tax and payroll taxes)*

7. What are personal income taxes? *(taxes on all types of income)*

8. What are payroll taxes? *(taxes on wages and salaries only)*

9. What are four major areas on which the federal government spends the tax revenue it collects? *(national defense, Social Security, medical care, interest on the national debt)*

Assesment

1. Have students write a short paper that describes the revenues collected and the expenditures made by the federal government.

2. Distribute pencils and paper. Have students draw their own political cartoon. Explain that the cartoon must summarize what they have learned about federal income tax revenue and expenditures. The cartoon cannot reflect any cartoons previously displayed in class.

Extension

1. Have students research the federal government's budget to determine how much revenue the government actually collects, the amount of that revenue that comes from payroll and income taxes, and the actual amounts the government spends on various programs.

2. Have students visit the Library of Congress (www.loc.gov) and the National Archives (www.nara.gov) web sites to find examples of political cartoons that represent the components of federal income taxes and expenditures.

3. Have students research how the remaining twenty-five percent of federal government tax revenue is spent.

Activity 1

Uncle Sam's Funny Money

$1 $1 $1 $1		$1 $1 $1 $1	
$1 $1 $1 $1		$1 $1 $1 $1	
$1 $1 $1 $1		$1 $1 $1 $1	
$1 $1 $1 $1		$1 $1 $1 $1	
$1 $1 $1 $1		$1 $1 $1 $1	

Activity 2
Political Cartoon Report

Text, Name Tags, or Titles (examples – someone speaking, name tags or signs on something or someone, title for the cartoon)

Symbols and What or Whom They Represent (examples – dove for peace, Uncle Sam for the United States)

Exaggerations—an idea or object that is overemphasized (example – caricatures of people with big ears, teeth or nose)

What statement are you trying to make with your political cartoon?

Scarcity and Choice

by Liudmila Guinkel (Russia)

LESSON DESCRIPTION

In this lesson, students participate in a role play as producers of two goods, allowing students to experience scarcity. They make choices about using their scarce resource to produce both or one of two goods. Then they construct production-possibilities curves, compute opportunity costs, and conclude that scarcity requires choice and every choice has an opportunity cost.

AGE LEVEL

15-18 years old

CONCEPTS

- scarcity
- productive resources
- opportunity cost

CONTENT STANDARDS

Productive resources are limited. Therefore people cannot have all the goods and services they want; as a result, they must choose some things and give up others.

BENCHMARKS

Scarcity is the condition of not being able to have all of the goods and services one wants. It exists because human wants for goods and services exceed the quantity of goods and services that can be produced using all available resources.

Like individuals, governments and societies experience scarcity because human wants exceed what can be made from all available resources.

People make choices because they cannot have everything they want.

Whenever a choice is made, something is given up.

OBJECTIVES

- Students will define scarcity and opportunity cost.

- Students will identify the opportunity cost of producing one good in terms of what is given up.
- Students will explain production-possibilities analysis.

TIME REQUIRED

One to two class periods

MATERIALS

- Copies of Activity 1 – 4 for each student
- Transparencies of Activity 2 - 4
- Scissors and glue
- Activity 1
- Activity 2
- Visual 1

PROCEDURE

1. Tell students that they will become producers. Point out that producers need resources to produce goods or provide services.

2. Give a copy of Activity 1, glue, and a pair of scissors to each student. Point out that each student has the same resources to produce squares and/or triangles. Read the instructions together and answer any questions. Allow a few minutes for students to make their squares and/or triangles.

3. Distribute a copy of Activity 2 to each student. Display a transparency of Activity 2. Point out that the table is labeled "production-possibilities schedule" because it will show all the possibilities that each student could have produced. Tell students to complete their tables as you work on the transparency. Discuss the following.

    A. Did anyone produce only triangles? How many squares were you able to produce? *(zero)* In the row for Possibility A, enter "10" for the number of triangles and "0" for squares.

    B. Did anyone produce eight triangles? How many squares were you able to produce? *(one)* In the row for Possibility B, enter "8" for the number of triangles and "1" for squares.

    C. Did anyone produce six triangles? How many squares were you able to produce? *(two)* In the row for Possibility C, enter "6" for the number of triangles and "2" for squares.

D. Did anyone produce four triangles? How many squares were you able to produce? *(three)* In the row for Possibility D, enter "4" for the number of triangles and "3" for squares.

E. Did anyone produce two triangles? How many squares were you able to produce? *(four)* In the row for Possibility E, enter "2" for the number of triangles and "4" for squares.

F. Did anyone produce only squares? How many triangles did you produce? *(zero)* In the row for Possibility F, enter "0" for the number of triangles and "5" for triangles.

Answers for Activity 2 table

Possibilities	Number of Squares	Number of Triangles	Opportunity Cost per Square
A	0	10	—
B	1	8	2
C	2	6	2
D	3	4	2
E	4	2	2
F	5	0	2

4. Point out that the table represents the production alternatives that are possible, hence the name production-possibilities schedule. Although each alternative was possible, each student could produce only one alternative given the limited resources.

5. Explain that students are experiencing the basic economic problem in this activity – scarcity. Define **scarcity** as the condition of not being able to have all of the goods and services one wants. It exists because human wants for goods and services exceed the quantity of goods and services that can be produced using all available resources.

6. Have students identify scarce resources used to produce squares and triangles. *(students, scissors, glue, resource strips, tables, classroom, electricity, and so on)*

7. Explain that scarcity of resources necessitates decision making. Remind students that they could choose only one alternative among all possibilities. Once a production alternative is selected another alternative cannot be selected because the available resources are limited.

8. Point out that whenever someone makes a personal decision to use limited resources (i.e., an economic choice), an opportunity cost is incurred. **Opportunity**

cost is the highest valued alternative that must be foregone because another option is chosen.

9. Ask students to identify the opportunity cost of producing the first square. *(Two triangles must be given up.)* Enter "2" in the fourth column in the row for Possibility B. Have students compute the opportunity cost of producing each additional square. *(The opportunity cost of getting an additional square in terms of sacrificed triangles is always the same –two triangles.)*

10. Tell students to plot the production possibilities on the graph on Activity 2, labeling each point. Tell them to connect the points. Point out that the resulting line is called a production-possibilities curve – a graphical representation of the production possibilities.

11. Display Visual 1 and explain that the points on the curve represent combinations of the two goods that are possible. Discuss the following.

    A. What does a producer gain by producing point C instead of point B? *(one square)*

    B. What is the opportunity cost of producing point C instead of point B? *(two triangles)*

    C. What does a producer gain by producing point D instead of point E? *(two triangles)*

    D. What is the opportunity cost of producing point D instead of point E? *(one square)*

    E. How many squares and triangles are represented by point I? *(one square and four triangles)*

    Note to teacher: Production-possibilities curves may be straight or curved (bowed-outward) lines. A straight line has constant opportunity costs. A bowed-outward line shows increasing opportunity costs as more of one good is produced.

12. Explain that the production-possibilities curve represents a limit on the alternatives that can be produced because of scarce resources – each producer has only one resource strip.

13. Have students compare points C and O and then compare points I and D. *(Point C represents six triangles and two squares, and point O represents the same amount of triangles and three squares. Point I represents four triangles and one square, and point D represents the same amount of triangles and three squares.)* Discuss the following.

A. Why can any producer produce point C? *(Each producer has enough resources.)*

B. If a producer produced possibility C, would the producer use all resources available? *(Yes.)*

C. Would combination O be preferable to combination C? *(Yes because more wants could be satisfied.)*

D. Why can't any producer produce the combination of triangles and squares represented by point O? *(There aren't enough resources.)*

E. Can any producer choose to produce either point I or point D? *(Yes, they are possible.)*

F. Why would point I be a less preferred choice than point D? *(Resources are wasted. The producer is not getting as much as possible from the available resources. It is inefficient.)*

G. How might a producer be able to produce point O? *(if the producer got improved technology or more resources)*

14. Point out that a production-possibilities schedule or table shows the maximum combinations of the two goods that can be produced, assuming a given state of technology and a given amount of resources. All points are possible, but only one may be chosen, just as students could only choose one combination of triangles and squares.

15. Explain that societies experience scarcity as well as individuals. Every economy has a limited amount of resources and must make decisions about what to produce.

Closure

Review the main points of the lesson.

1. What is scarcity? *(the condition of not being able to have all of the goods and services one wants)*

2. Why does scarcity exist? *(Human wants for goods and services exceed the quantity of goods and services that can be produced using all available resources.)*

3. What is opportunity cost? *(the highest valued alternative that must be foregone because another option is chosen)*

4. What was the opportunity cost of an additional square in this lesson? *(two triangles)*

5. *Why do choices have an opportunity cost? (People must give up some desirable things in order to have more of other things because of limited resources.)*

Assesment

1. Assume that one society produces two kinds of goods (watches and doughnuts) using all its resources. If the society decides to increase the production of doughnuts, then the production of watches:

    a. Can be increased.

    b. Must be reduced.

    c. Must remain the same.

Use the following production-possibilities schedule to answer the following questions.

Cakes (in thousands)	**Bicycles (in hundreds)**
0	15
1	13
2	9
3	0

2. What is the opportunity cost of producing the first one thousand cakes?

    a. 200 bicycles *

    b. 500 bicycles

    c. 900 bicycles

    d. 1500 bicycles

3. Which of the following combinations of producing cakes and bicycles is impossible?

    a. 1000 cakes and 1000 bicycles

    b. 2000 cakes and 1300 bicycles *

    c. 2000 cakes and 500 bicycles

d. 2000 cakes and 800 bicycles

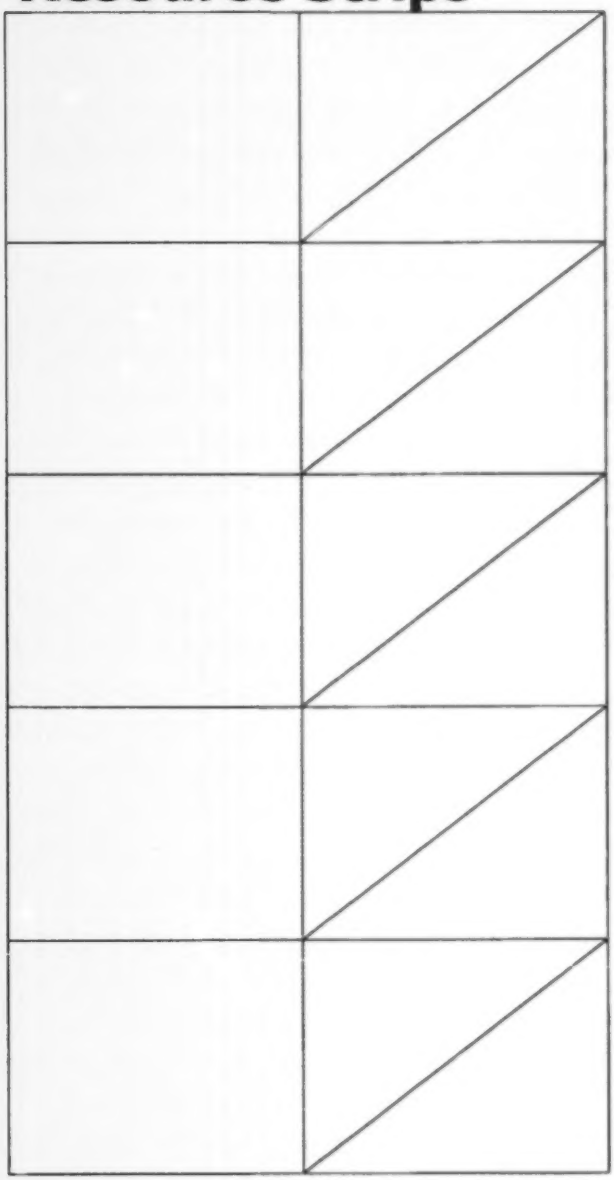
Extension

Provide the following table to students.

Possibilities	Number of Squares	Number of Triangles	Opportunity Cost per Square
A	0	10	—
B	1	8	2
C	2	6	2
D	3	4	2
E	4	2	2
F	5	0	2

Tell students to plot the new production-possibilities curve on Activity 2. Have students provide possible causes for a shift in the curve. *(increase in resources, improved technology)*

Activity 1
Resource Strips



Instructions

Cut out the entire table on the outside.

Fold the table along the dashed line.

Glue the two sides together, lines on the outside.

Cut out squares and/or triangles – your choice.

Activity 2

Production Possibilities Schedule

Possibilities	Number of squares	Number of Triangles	Opportunity Cost Per Square
A			
B			
C			
D			
E			
F			

Public Goods and Services

by Svetlana Yurkovskaya (Belarus)

LESSON DESCRIPTION

Students compare and define private and public goods. They receive money and must make a decision about paying for the heating in the classroom. This activity reinforces the concept of public goods and helps students identify and explain the free-rider problem. This lesson should be taught when the weather is cooler or cold.

AGE LEVEL

13-18 years old

CONCEPTS

- private goods and services
- public goods and services
- non-exclusion
- shared (non-rival) consumption
- free-rider
- taxes

CONTENT STANDARDS

There is an economic role for government to play in a market economy whenever the benefits of a government policy outweigh its costs. Governments often provide for national defense, address environmental concerns, define and protect property rights, and attempt to make markets more competitive. Most government policies also redistribute income.

BENCHMARKS

Public goods and services provide benefits to more than one person at the same time, and their use cannot be restricted only to those people who have paid to use them.

If a good or service cannot be withheld from those people who do not pay for it, providers expect to be unable to sell it and therefore will not produce it. In market economies, governments provide some of these goods and services.

OBJECTIVES

- Students will define public goods, private goods, free rider, and taxes.

- Students will explain the characteristics of public goods.
- Students will compare public goods with private goods.
- Students will define and explain the free-rider problem.
- Students will explain why governments provide public goods.

TIME REQUIRED

One to two class periods

MATERIALS

- Copies of Activity 1, cut apart, to provide five duck dollars for each student
- One copy of Activity 2 for each student
- Transparencies of Visuals 1 and 2
- Small cardboard box labeled "HEATING"
- A variety of goods such as candy, packages of chips, boxes of raisins, cans of soda pop, priced in amounts of one duck dollar to five duck dollars
- Activity 1
- Activity 2
- Visual 1
- Visual 2

PROCEDURE

1. Explain that most modern (developed) economies are mixed economies. Mixed economies are those that provide goods and services through markets and through federal, state, and local governments. The purpose of this lesson is to analyze the differences between private goods and services and public goods and services in order to explain why governments provide public goods and services.

2. Ask students to compare two goods, an apple and police protection, on the basis of the following questions.

   A. If you don't pay for an apple at the store, can you be kept from receiving an apple at the store? *(Yes.)*

   B. If you don't pay for police protection, can you be prevented from receiving police protection? *(No.)*

   C. If one person eats an apple, does this prevent others from eating the same apple? *(Yes.)*

   D. If one person receives police protection, does this prevent others from receiving protection? *(No.)*

   E. Who benefits from consuming an apple? *(the person who consumes it)*

F. Who benefits from police protection? *(all people living in a community)*

3. Point out that an apple is an example of a **private good**. A private good is one for which

   - each unit produced can be priced and sold to individuals,
   - each unit benefits the buyer exclusively,
   - those who don't pay can be excluded from owning/having the good.

   Private goods are produced and sold by firms through markets.

4. Ask students for examples of private goods that they and their families consume. Record their answers on the board. *(food and clothing items, paper, pencils, dry cleaning, car repair, and so on)*

5. Remind students that the purchase of a private good in the market will benefit only the buyer. Markets are ideally suited to the provision of private goods. Buyers know that when they purchase such goods, the price that they pay gives them the rights to exclusive use of and benefits from the product. Remind students that if you pay for and eat an apple, no one else can eat the same apple. The apple is a completely private good.

6. Have students look at the examples of private goods listed on the board and determine whether these goods have the characteristics of private goods.

7. Explain that police protection is not a private good – it is a public good. If a very rich family hired its own police force to improve its safety in an area, others in the area will benefit from the safer environment even though they didn't pay for the protection. Many can share the consumption of police protection, and those who don't pay can't be excluded from benefiting.

8. Explain that a **public good** is one that is consumed collectively by people whether or not they pay for the good. In other words, people share the consumption of public goods (shared consumption) and non-payers can't be excluded from using the good (non-exclusion). Ask for examples of other public goods, listing answers on the board.

9. Display Visual 1 and remind students that public goods have two basic characteristics, shared (i.e., non-rival) consumption and non-exclusion. **Shared consumption** means that many people receive the benefits of the good at one time. The benefits of private goods, such as apples or computers, are usually received and used up by one or a few consumers. However, many share the benefits of police protection or national defense.

10. Explain that **non-exclusion** means that people cannot be prevented from using a good, even if they did not pay for it. All people receive the benefits of police

protection and national defense whether they paid taxes or not. To receive the benefit of an apple or a computer, a person must pay for the apple or the computer.

11. Have students look at the examples of public goods listed on the board and determine whether these goods have the characteristics of shared consumption and non-exclusion.

12. Refer to Visual 1 and read the definitions of public and private goods.

13. Tell students that they will participate in an activity.

    Note: In this activity, heat is a public good. In the real world, heat in a person's home or in a business is a private good. People who don't pay for the heat can be excluded from having heat.

14. Explain the following.

    - Each student will receive five duck dollars that may be spent buying goods in the Duck Dollar Shop. The shop offers various snacks at different prices.
    - It is also necessary to pay to heat the classroom. To maintain a temperature of 68 ° Fahrenheit, the teacher must pay $60 to the principal.
    - The actual temperature in the classroom will depend on how much money students contribute to pay the heat.
    - Each student must decide how to spend his or her money.
    - Students will place heating contributions in a box labeled "HEATING."

15. Make sure that students understand what will happen in the activity. Place the box for collecting funds for heating on a desk or table near the teacher's desk. Give each student five duck dollars. Remind them that they must make decisions about spending their money.

16. Explain that students will have about ten minutes to make their decisions. Display the goods for sale on a desk or table. Act as the shopkeeper and sell goods and services at the Duck Dollar Shop.

17. At the end of ten minutes, have one student calculate the revenue received at the Duck Dollar Shop and have another calculate the amount collected for heating. Discuss the following.

    A. If individuals did not pay for heating the classroom, would they still benefit from heating because they are able to work and study in a warm classroom? *(Yes.)*

B. In cold weather, would you prefer to study in a cold or a warm classroom? *(warm)*

C. If a new student became a member of the class today, would he or she still benefit from a warm classroom even though he or she hadn't paid? *(Yes.)*

18. Have the two students report the amount of revenue collected from sales at the Duck Dollar Shop and the amount collected for heating.

19. Point out that not enough money was collected to maintain a temperature of 68° Fahrenheit, so the heat will be turned down the rest of the day.

20. Read the following example and record the calculations on the board.

If there are 20 students, the class must pay $60 to maintain a temperature of 68°F, so each degree of warmth costs about 88¢ ($60/68° = $.88). If the total sum of money received from students for heating was $30, then the temperature in the classroom could only be about 34°F ($30/$.88 = 34°), and students and teachers would have to wear gloves, hats, and jackets in order to work in the classroom.

21. Discuss the following.

A. In this activity, how is heating in the classroom like a public good? *[Those who don't pay for heat can't be excluded from benefiting from the heat (non-exclusion). It provides benefits to more than one student at the same time (shared consumption).]*

B. Is heating in a home or business a public good? *(No.)* Why not? *(People who don't pay for heat in their homes or businesses can be excluded from receiving heat. Other people outside the homes or businesses do not share in the consumption.)*

C. Each of you could choose to contribute to the cost of heating. How many of you, who benefit from warm temperatures in the classroom, contributed? *(Answers will vary; however, not many were likely to pay for heating.)*

D. Earlier, all of you indicated that you enjoyed working in a warm classroom. Why didn't you pay so that you could have a warm or warmer classroom? *(Maybe they wanted to spend their money on treats, and they hoped that someone else would contribute to pay for the heat.)*

22. Explain that in this activity, even though heat was socially desirable (everyone wanted it), it could not be effectively provided in a private market because people who didn't pay couldn't be excluded and everyone could benefit from the heat at the same time.

23. Explain that when people in the classroom benefit from heating but do not contribute to pay for heating, they are called **free riders**. Free riders are people who benefit from something for which they didn't pay. Generally, the problem of free riding occurs when individuals refuse to share in the cost of providing a public good. Discuss the following.

    A. Do you think that neighborhood streets should be lighted at night? *(Answers will vary but many will say yes.)*

    B. If everyone in an area agrees that this is important and everyone living in the area is asked to contribute money to provide lighting, what might happen? *(Some people won't be able to or will be unwilling to pay for the lights.)*

    C. If your family pays for a light in front of your home/apartment, who will benefit? *(everyone who is able to see better, walk better, and feel safer because of the light)*

    D. Will those who didn't pay for the light benefit? *(Yes.)* Is there any way that they can be excluded from consuming the benefits of the light? *(No.)*

    E. What problem is this? *(free riding)*

    F. What would happen if everyone in the neighborhood chose to free ride? *(There would only be one light; the one in front of your home.)*

    G. Why don't private firms have incentives to provide public goods? *(They wouldn't be able to exclude people who didn't pay.)*

24. Explain that public goods are socially desirable and cannot be effectively provided in private markets because people who don't pay can't be excluded and many people can share the consumption of the good. Generally, people expect governments to provide public goods.

25. Explain that **taxes** are required payments to government. When governments collect taxes, they use part of the revenue to provide public goods. These are goods that benefit many people at one time and from which those who don 't pay can't be excluded.

26. Ask for other examples of public goods that governments provide. *(national defense, flood protection, roads, bridges, lighthouses, fire protection, police protection, parks)*

Closure

Review the main points of the lesson with the following.

1. Define a private good. *(A good or service for which each unit produced can be priced and sold to individuals so that each unit benefits the buyer exclusively and those who don't pay can be excluded from owning/having the good.)*

2. Give some examples of private goods. *(apple, shoes, shirt, pencil, desk, theatre ticket)*

3. Define public goods. *(A good or service that is consumed collectively by people whether or not they pay for the good. In other words, people share the consumption of public goods and those who don't pay, can't be excluded from using the good.)*

4. What is non-exclusion? *(the inability to exclude someone who doesn't pay for a good or service from benefiting from that good or service)*

5. What is shared consumption? *(many people benefiting from the consumption of a good or service at the same time)*

6. Give examples of public goods. *(national defense, police protection, streetlights, roads)*

7. What is a free rider? *(someone who consumes a good or service without paying for it)]*

8. Why aren't public goods provided in private markets? *(Producers can 't exclude those who don't pay.)*

9. Who provides public goods? *(governments)*

10. How do governments pay for the provision of public goods? *(collecting taxes)*

11. What are taxes? *(mandatory payments to government)*

Assesment

Distribute a copy of Activity 2 to each student. Tell students to read the directions and categorize the goods listed as public or private. Answers are on Visual 2.

Have students contrast the characteristics of public goods with private goods.

Extension

Have students think about why the free-rider problem is more serious in large groups than it is in smaller groups. *(Information about consumers and their preferences is more difficult to obtain as the size of the group increases. Anonymity increases the incentives*

to be a free rider because it is less likely that a person 's behavior will be revealed to others.)

Activity 1
Duck Dollars

1 duck dollar 1 duck dollar	1 duck dollar 1 duck dollar
1 duck dollar 1 duck dollar	1 duck dollar 1 duck dollar
1 duck dollar 1 duck dollar	1 duck dollar
1 duck dollar 1 duck dollar	1 duck dollar 1 duck dollar

Activity 2
Public or Private?

For each of the following items, write either public good or private good in the space provided. Explain your decision.

1. Ice cream _____
_____

2. National weather service _____
_____

3. Potato or corn chips _____
_____

4. Movie _____
_____

5. Fire protection _____
_____

6. Library _____
_____

7. Mosquito control _____
_____

8. Personal computer _____
_____

9. Fireworks display _____
_____

Visual 1
Private or Public

Characteristics of Public Goods

Shared (non-rival) consumption means that many people receive the benefits of a good or service at one time.

The benefits of private goods, such as apples or computers, are usually received and used up by one consumer. However, many share the benefits of police protection or national defense.

Non-exclusion means that people cannot be prevented from using a good or service even if they did not pay for the good or service.

All people receive the benefits of police protection whether or not they pay taxes to provide police protection. To receive the benefit of an apple, the customer must pay for the apple.

Definitions of Private and Public Goods

A **private good** is a good or service that can be withheld from a consumer who refuses to pay (exclusion), and whose consumption by one person reduces its availability to someone else.

A **public good** is a good or service that cannot be withheld from a consumer who refuses to pay for the good or service (non-exclusion), and whose consumption by one person does not reduce its availability to others (shared consumption).

Visual 2

Answers to Activity 2

1. **Ice cream: private good**
   People can be excluded from eating ice cream if they don't pay for it. One person's consumption of ice cream prevents others from consuming it.

2. **National weather service: public good**
   People who don't pay for the service can't be excluded from hearing or seeing the weather report. One person hearing or seeing the weather report doesn't interfere with others seeing or hearing the report.

3. **Potato or corn chips: private good**
   People can be excluded from consuming chips if they don't pay for the chips. One person's consumption of chips prevents others from consuming the chips.

4. **Movie: private good**
   People can be excluded from viewing a movie if they don't buy a ticket.

5. **Fire protection: public good**
   People who don't pay can't be excluded from consuming/benefiting from fire protection. One person's consumption of fire protection doesn't reduce the ability of others to consume it.

6. **Library: public good**
   People who don't pay can't be excluded from using the library. One person's use of the library doesn't reduce the ability of others to use the library.

7. **Mosquito control: public good**
   People who don't pay can't be excluded from the benefits of mosquito control. One person's consumption of mosquito control doesn't reduce the ability of others to benefit from mosquito control.

8. **Personal computer: private good**
   People who don't pay for a personal computer can be excluded from owning one. One person's consumption of the personal computer prevents others from consuming it.

9. **Fireworks display: public good**
   People who don't pay can't be excluded from viewing the fireworks display. One person's consumption of the fireworks display doesn't reduce the ability of others to consume it.

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